ABSTRACT

Identity recognition is very important in a security system because it requires a valid

identification in purposes to controlling the security access. There are a lots of identity

recognition techniques that have been used such as a password, PIN, ID card, and others.

This technique possessed many weaknesses, which can be duplicated, stolen, forgotten or

lost. Identity recognition techniques that are being developed now are biometric

techniques. The purpose of biometric techniques is to identify an individual through the

physical characteristics and behavior of that individual such as blood vessels of eye retina

that are unique and not easily changed because it is located inside the eye.

In this final project will be designed a individual identification system through a pattern

of retinal blood vessels. There are two stages to build the identification system, the first

stage is modeling system and the second stage is testing system. In each stage of the

process is the initial preprocessing, this process is done with the input of retina photos to

get the grayscale image, then the feature extraction process is performed using Local

Binary Pattern (LBP). The results of this process depends on the preprocessing. the

process of identifying characteristic was conducted using K-Nearest Neighbor (K-NN).

The test results by applying the method of LBP as a method for extracting the feature

from the image of the blood vessels and K-NN fot the process of identification with the

ratio of the data model and test data is 3: 2, the test is made by applying multiple testing

scenario, changing the value of the neighborhood parameter (P), radius (R) in the LBP

method, adjusting the size of the image, and change the parameter k in the K-NN method.

Optimal configuration is obtained by using the 8 parameters on the number of

neighborhood (P = 8), with a radius of 2 (R = 2), and 1 in the parameter k. performance

systems capable of generating value reached 96.667% accuracy.

Keyword: Biometrics, blood vessel of retina, LBP, K-NN.

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